Senior Secondary School Students Knowledge of Topical Environmental Issues in Delta State

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Abstract: **The study focused on determining Biology students' knowledge of topical environmental issues in Delta state. Two research questions and one null hypothesis guided the study. The study adopted descriptive survey design. The population of the study comprised 19,845 SS2 Biology students' in 310 public secondary schools in Delta state. The sample for the study comprised 992 Biology students which represent 5% of the population. Researcher's developed instrument termed Students Environmental Knowledge Test (SEKT) was used for data collection and were validated by three experts. The research questions were analyzed using mean and standard deviation while z-test was used to test the null hypothesis at 0.05 alpha level. The major finding of the study based on the analyzed data showed that SS2Biology students have low level of environmental knowledge and there is no significant different between male and female students' environmental knowledge level. Based on the findings of the study, conclusions were drawn, recommendations made and suggestions for further studies were given.**

Keywords: **Environment, Environmental Knowledge, Knowledge and Topical Environmental Issues.**

I. INTRODUCTION

An outstanding feature of our environment today is the speed at which it is deteriorating. One of the most important characteristics of this environmental deterioration is that it affects all mankind regardless of country, region, or race. As a result of this, environmental issues have become increasingly important for human beings throughout the world. The whole world therefore, is a stakeholder and this raises issues on who should do what to combat environmental deterioration (Zulfequar, 2013). The cause of this new development in our environment could be traced to unplanned development in every part of the country, rapid industrialization, emission of atmospheric warming gases or greenhouse gases (GHG) especially carbon dioxide (CO_2) into the atmosphere, unprecedented growth in population and lack of proper environmental knowledge especially among the youth on how to protect and conserve the environment (Pant, Guttikunda & Peltier, 2016).

Environment refers to the sum total of all conditions that surround man at any point in time on the earth's surface. It includes physical, biological, social, cultural and economic factors which constitute the surroundings of human being who is both the creator and molder of the environment (Pillai, 2012). According to Sampson (2013), the term environment could be perceived as the aggregate of external conditions that influence the life of an individual or population specifically the life of man and other living organisms on the earth's surface. The role the environment plays to a nation's developmental process cannot be relegated to the background as it is not just the physical surrounding for natural habitats but also provides the basis for human exploits for agricultural, industrial, commercial, technological and tourism development of a society. Therefore, to keep our environment safe and livable, it is important to raise environmental consciousness through environmental education to enhance students' environmental knowledge.

Knowledge is defined as human faculty resulting from interpreted information, understanding the germinate from combinations of data, information, expression, experience and individual interpretation (Dekel, 2016). Knowledge reflects a more intellectual framework. It is more than to retain acquired information about an issue, but being able to orderly comprehend, apply, analyze, synthesize and evaluate situations (Sakari (2009). Environmental knowledge is therefore defined as the capacity of an individual to act successfully in daily life on a broad understanding of how people and societies relate to each other and to natural systems, and how they might do so sustainably (Kumud, 2014). It is believed that if people become more knowledgeable about the environment and its associated issues, they will in turn become more conscious of the environment and its problems, thus be more motivated to act toward the environment in more responsible ways (Fahlquist, 2008). This can only be achieved through environmental awareness or environmental education.

Environmental education is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments, and skills to work individually and collectively toward solutions of current/topical environmental issues (UNESCO, 2010).Environmental issues or topical environmental issues may be defined as problems with the planet's systems (air, water, soil, etc.) that is of interest to everybody that have developed or occurred as a result of human interference or mistreatment of the planet. Such issues include: pollution (air, water, soil and sound), climate change, flooding, global warming, deforestation, depletion of ozone layer, wildlife crimes, loss of biodiversity and erosion.

According to Benneth (2014)the impact of these environmental issues is felt across the country as different

areas suffer from flood disaster, late onset of rainfall and early cessation of rainfall, reoccurring incidence of drought, increasing temperature, reduce river flow, declining water table, loss of some plants and animal species and outbreak of some climate related diseases such as malaria, meningitis etc. Due to the speed at which our environment is deteriorating, there is need therefore to investigate students' knowledge of topical environmental issues especially Biology students' as most environmental concepts are found in secondary school Biology curriculum. One factors that researchers believed to have effect on students' knowledge level is gender (Onoja, 2014).

Gender simply means the character or characteristics of being male or female, man or woman, boy or girl (male or female student).Gender is by this attribute seen as the categorization in the world of matter into sex (Onoja, 2014). Robert (2016) viewed gender as a social construct which is not biologically determined but a concept equivalent to race or class. Chinedu (2014) defined gender as a learned socially constructed condition ascribed to male and female. The way individuals perceive environmental issues such as good quality of environment, deforestation, pollution among others could be influenced by these expectations. Thus, Ekezie (2010) opined that gender is an important variable in environmental discussion. Ekezie (2010) agreed with Chinedu (2014) who also stated that female students relate friendlier with the environment than their male counterparts. For instance, sweeping of classrooms and school compound, cleaning of toilets is mostly done by female students.

Studies have been carried out by different scholars such as;Ishaya and Abaje (2010), Oruonye (2011), Ofoebe (2012), Chinedu (2013), Agiande (2014), Sampson (2014) and Ukalaand Osuafor(2019) to determine level of awareness, attitude and perception of students toward environmental issues in different parts of the country. They found out that students possessed low awareness and poor attitude toward environmental issues. In another study Ezeudu (2009), Comfort (2011) and Onoja (2014), found that gender has no significant influence on students' environmental awareness, attitude and knowledge level. Contrary to the above findings, Arbaat (2013) found out that gender has significant influence on students' level of environmental knowledge, that male was more knowledgeable than female.

Based on the contrary findings over the years, and the fact that one cannot be certain that Delta state students especially Biology students are knowledgeable of the imminent danger facing them due to these environmental problems as no study has been carried out to the best of the researcher's knowledge to determine students' knowledge of topical environmental issues in the state. Therefore, the present researcher sought to investigate students' level of knowledge of topical environmental issues in Delta state.

Statement of Problem

Students I don't care attitude in recent time toward the environment in delta state has created a lot of worries in the mind of researchers. In addition to this, research has been conducted or carried out in some parts of the country to examine students' level of awareness, attitude, behaviour toward environmental issues but to the best of the researcher's knowledge none has been carried out in Delta state despite the numerous environmental issues faced, ranging from pollution, land degradation, flooding, climate change, desertification and deforestation among other challenges. One cannot therefore be certain that Delta state students are knowledgeable of the imminent danger facing them due to these environmental issues. The problem put in question form, what is the knowledge level of biology students toward environmental issues in Delta state?

The Purpose of the Study

The purpose of the study was to determine specifically the;

1. Biology students' level of knowledge of topical environmental issues in Delta state.
2. Influence of gender on SS2 Biology students' level of knowledge of topical environmental issues in Delta State.

Research Question

1. What is the mean score rating of SS2 Biology students on their knowledge of topical environmental issues in Delta state?
2. What is the mean scores rating of male and female SS2Biology students' level of knowledge of topical environmental issues in Delta state?

Hypothesis

1. There is no significant difference in the mean scores rating of male and female SS2Biology students on their knowledge level of topical environmental issues in Delta state.

II. METHODS

The study adopted descriptive survey design. A survey research design is one in which a group of people or items are studied by collecting and analyzing data from only a part considered to be representative of the entire group (Nworgu, 2015).The study was carried out in Delta state, the choice of the area was anchored on the fact that the area is deeply faced with many environmental issues such as erosion, flooding, population explosion, deforestation, land degradation, bush burning, pollution amongst others which are strongly linked to the effects of human activities in the environment. The population of the study comprised 19,845 SSII Biology students in 310 secondary schools in Delta state. The sample for the study is made up of992 representing 5% of the population (439 male and 553 females) selected from 32 secondary schools.

The researchers developed instrument termed Students Environmental Knowledge Test (SEKT)for data collection. The instrument (SEKT) was developed using West African Senior School Certificate Examination (WASSCE) past question papers, environmental related questions from Biology textbooks and reviewed articles. The instrument contains 20 items with each item having multiple choice options numbered A-D. Each correctly answered question attracts five (5) marks with a highest score of 100.The instruments were divided into two (2) sections, A and B. Section A contain respondents' bio-data while section B contained 20 items. The students were instructed to thick the option that is best suitable to them. The instrument was validated by three experts one each from Department Science education and educational foundation, both from Nnamdi Azikiwe University, Awka and third expert from Department Science education, University of Nigeria, Nsukka.

The instruments were trial tested on 40 students from four senior secondary schools in Ika Federal constituency which is outside the study area but share similar characteristics with the study area. The reliability of the items in the instruments was determined using Kuder-Richardson formula 20 (KR-20) and the reliability coefficients of the 0.84 was obtained. The instruments were administered by the researcher with the help of the Biology teachers in the selected schools to facilitate data collection. Mean and standard deviation scores was used to answer research questions while Z-test was used to test the null hypotheses at 0.05 level of significance. Mean score ranging from 0.01-49.9 and 50.00-100.00 were accepted as not environmentally knowledgeable and environmentally knowledgeable respectively for the study. The decision rule is that where p-value is less than 0.05, the null hypothesis was rejected; otherwise, the null hypothesis was not rejected.

III. PRESENTATION OF RESULTS

The results of the study are presented in line with the research questions.

Research Question 1**:** What is the environmental knowledge mean scores of SSII Biology students' in Delta state?

Table1. Result of mean and standard deviation analysis of SS2 Biology Students' level of knowledge of Topical Environmental Issues in Delta state

Variable	N	$\bar{x}$	SD	Remark
Knowledge	992	40.5	14.9	Not knowledgeable

The result in table 1 shows that the overall environmental knowledge mean score of SSII Biology students is 40.5 with a standard deviation of 14.9.Judging from the 50.00 mean score benchmark for the study, the result indicates that SS2Biology students possessed low level of environmental knowledge therefore are not knowledgeable. The high SD value of 14.9 on students' knowledge shows that students' mean scores are widely spread.

Research Question 2**:** What is the mean score of male and female SS2 Biology students on their knowledge of topical environmental issues in Delta state?

Table 2: Result of Mean and Standard Deviation Analysis of environmental Knowledge Scores of Male and Female SS2 Biology Students of Topical Environmental Issues

Gender	N	$\bar{x}$	SD	Remark
Male	439	40.3	14.8	Not Knowledgeable
Female	553	40.7	15.0	Not Knowledgeable
Total	992	40.5	14.9	Not Knowledgeable

The result in Table 2 showed that the environmental Knowledge level mean score of male SS2Biology students' in Delta state is 40.3 with a standard deviation of 14.8 while the female SS2 Biology students mean score is 40.7 with a standard deviation of 15.0.furthermore, the result showed that the overall knowledge mean score of male and female Biology students is 40.5 with a standard deviation of 14.9 which is less than 50.00 mean benchmark for the study. Therefore, male and female SS2 Biology students are not knowledgeable.

Hypothesis 1: There is no significant difference in the mean score of SS2 male and female Biology students on their knowledge of topical environmental issues in Delta state.

Table 3: Z-test of significance difference between the Mean Scores of Male and Female SS2 Biology Students' Level of Knowledge of Topical Environmental Issues

Gender	N	$\bar{x}$	SD	DF	t	P value	Decision
Male	439	40.3	14.8	990	.378	.706	Not significant
Females	553	40.7	15.0				

The result in Table 3 shows a t-value of .378 with a significant P value of .706 which is greater than 0.05 level of significance for the study. The null hypothesis was therefore not rejected. Thus, there is no significant difference in the mean score of SS2 male and female Biology students on their level of knowledge of topical environmental issues in Delta state.

IV. DISCUSSION OF THE FINDINGS

The result of data analysis in table 1 showed that SS2Biology students are not environmentally knowledgeable on topical issues. This finding agreed with Ezeudu (2009),Onoja (2014), Auwalu (2014) who carried out studies on environmental issues amongst secondary school students and also found that students are not environmentally knowledgeable. On the contrary, Arbaat (2009) found that students have high level of environmental knowledge.

The result of the study in the test of significance further revealed that gender has significance influence on students' knowledge level of topical environmental issues. Although, the mean scores revealed that female students were slightly more knowledgeable than the male students. The result

confirmed the findings of Gunde and Parit (2015) who carried out a study on environmental knowledge of college students and found out that female was much more knowledgeable about environmental issues than male. However, the finding of the study supports the findings of Comfort (2011), Onoja (2014) and Sampson (2014) who found out in their studies that gender has no significance influence on students' environmental knowledge.

The reasons for the contradictory findings between the present study and other studies could be traced to many factors such as population of study and geographical location of the various studies. Although it not very clear if the various reasons given above are the cause for the contrary findings. By implication, the study established that SS2 Biology students (both male and female) are not knowledgeable on topical environmental issues in Delta state. Therefore, they are vulnerable to harmful effects of environmental pollution and degradation among other environmental hazard that are inherent in their immediate communities and residential homes. Another implication of this finding may be that the curriculum content of the subject areas where environmental concepts are infused are not properly implemented.

V. RECOMMENDATION

Based on the findings of the study, the following recommendation was made.

i. Government at all level through ministries of environment should organize awareness campaign in and out of the school to educate our children on the importance of good and healthy environment.

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